Claims:

We claim:

1. A method of disinfecting and stabilizing organic waste, comprising

intimately mixing organic waste with one or more mineral by-products to form a mixture having a pH of less than about 9; and

heating and drying the mixture to produce a stable, granular bio-mineral product.

2. The method of claim 1, wherein the organic waste is partially de-watered.

3. The method of claim 1, wherein the stable, granular bio-mineral product is biologically stable.

4. The method of claim 1, wherein the stable, granular bio-mineral product is chemically stable.

5. The method of claim 1, wherein the stable, granular bio-mineral product is physically stable.

6. The method of claim 1, wherein the one or more mineral by-products are present in an amount of at least about 10 % by wet weight of the organic waste.

7. The method of claim 1, wherein the organic waste comprises waste selected from the group consisting of sewage sludge, animal manure, biosolid, pulp and paper waste, fermentation biomass, food waste, and combinations thereof.

8. The method of claim 1, wherein the one or more mineral by-products comprise a mineral by-product having a pH of less than about 9 or a mixture of mineral by-products having a combined pH of less than about 9.

9. The method of claim 1, wherein one or more mineral by-products comprise one or more mineral by-products selected from the group consisting of coal combustion wastes, wood ash, calcitic and dolomitic limestone, cement kiln dust, mineral and rock fines, gypsum, steel slag, and combinations thereof.

10. The method of claim 1, wherein the one or more mineral by-products are present in an amount that provides a mixture having a predetermined minimum level of solids.

11. The method of claim 10, wherein the minimum level of solids is in the range from about 30% to about 50% by weight of the mixture.

12. The method of claim 1, wherein the one or more mineral by-products comprise two or more mineral by-products.

13. The method of claim 1, wherein the heating and drying takes place in a hot air dryer.

14. The method of claim 1, wherein the heating and drying is by a direct or indirect dryer.

15. The method of claim 1, wherein the stable, granular bio-mineral product is disinfected.

16. The method of claim 1, wherein the stable, granular bio-mineral product has a solids level of at least about 60 % after drying.

17. The method of claim 1, wherein the stable, granular bio-mineral product has a pH less than about 9 after drying.

18. The method of claim 1, wherein the stable, granular bio-mineral product contains a non-pathogenic microflora.

19. The method of claim 1, wherein the stable, granular bio-mineral product does not produce significant noxious odors when rewet.

20. The method of claim 1, wherein the stable, granular bio-mineral product does not produce a significant amount of ammonia or methyl amines.

21. A method of making a stable, granular bio-mineral material, comprising intimately mixing organic waste with mineral by-products to form a mixture; and

heating and drying the mixture to produce a stable, granular bio-mineral product;

wherein the mixture has a pH of less than about 9.

22. A stable, granular bio-mineral product made by a method comprising

intimately mixing organic waste with one or more mineral by-products to form a mixture having a pH of less than about 9; and

heating and drying the mixture to produce a stable, granular bio-mineral product.

23 A fertilizer comprising a biologically stable, granular bio-mineral product made by a method comprising

intimately mixing organic waste with one or more mineral by-products to form a mixture having a pH of less than about 9; and

heating and drying the mixture to produce a stable, granular bio-mineral product.

24. A soil amendment comprising a biologically stable, granular bio-mineral product made by a method comprising

intimately mixing organic waste with one or more mineral by-products to form a mixture having a pH of less than about 9; and

heating and drying the mixture to produce a stable, granular bio-mineral product.

25. A soil substitute comprising a biologically stable, granular bio-mineral product made by a method comprising

intimately mixing organic waste with one or more mineral by-products to form a mixture having a pH of less than about 9; and

heating and drying the mixture to produce a stable, granular bio-mineral product.

26. A system for disinfecting and stabilizing organic waste comprising

means for intimately mixing organic waste and an effective amount of one or more mineral by-products to form a mixture having a pH of less than about 9;

heating means for heating the mixture; and

drying means for drying the mixture to produce a stable, granular bio-mineral product.

27. A system for making a stable, granular bio-mineral product comprising

means for intimately mixing organic waste and an effective amount of one or more mineral by-products to form a mixture having a pH of less than about 9;

heating means for heating the mixture; and

drying means for drying the mixture to product a stable, granular bio-mineral product.